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AUTHOR Bjork, Lars G.
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ABSTRACT

Administrative leadership as a factor associated with the development of the University of New Mexico from an undergraduate teaching institution toward a nationally-ranked graduate research university is discussed. An ethnographic approach was employed for the institutional study, using documents from the university files and informal interviews. Factors concerning institutional development are briefly reported for the period 1967-1978. The internal modification of the organizational structure of the university, including the establishment of the Office of the Vice President for Research, is described. It is noted that such adjustments also facilitated the university's attempts to provide leadership for its research agenda and to secure external research support. The leadership activities of the Office of the Vice President for Research are also discussed with a focus on its efforts to protect faculty research interests and to secure external research support funds. Both sets of organizational development activities were associated with the university's emergence as a nationally-ranked research institution. (SW)

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ADMINISTRATIVE LEADERSHIP AND THE DEVELOPMENT OF A RESEARCH UNIVERSITY

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Lars G. Bjork, Ph.D.
Department of Educational Administration
The University of New Mexico
Albuquerque, New Mexico

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Introduction

The principal objective of this study has been to discover, examine, and explain administrative leadership as one factor associated with the development of the University of New Mexico from an undergraduate teaching institution in the direction of a nationally-ranked graduate research university. The University of New Mexico was selected as the unit of study because it was representative of a group of Rocky Mountai, and High Plains universities that appeared to be engaged in simila, developmental activities during a period of uncertainty about the federal government's commitment to university research support and provided a unique opportunity to study institutional development.

The data bearing on institutional development are briefly reported for two separate, sequential time periods. The initial sections of the descriptive narrative cover the internal modification of the organizational structure of this university, including the establishment of the Office of the Vice President for Research. Such adjustments also facilitated the University's attempts to provide leadership for its research agenda and to secure external research support. The latter sections of the descriptive narrative covered the leadership activities of the Office of the Vice President for Research focusing in particular on efforts to protect its research interests and to secure external research support funds. Both sets of organizational development activities were associated with the University's emergence as a nationally-ranked research institution.

Methodology

The dynamic process through which an institution of higher

education responds to change in its external environment and develops from an undergraduate teaching institution to a graduate research university is not well understood. The literature on institutional adaptation to external environmental change is essentially atheoretical in nature and contains little work designed to test theories describing the dynamics of the change process (Giaquinta, 1973, p. 178).

This study is directed toward developing a set of naturalistic generalizations and building theory rather than toward affirming a prevailing theory. The significance of discovering theory from data, the generation of "grounded theory" (Glaser and Strauss, 1967), lies in the researcher's ability to arrive at relevant "predictions, explanations, interpretations and applications" (p. 1) that are both empirically sound and singularly pertinent to the phenomenon under study.

This study focuses on a highly particular slice of the University's environment rather than comprehensively describing and analyzing an institution's responses to changes in its macro environment. It is limited to the University's research environment and presents only a piece of that larger story.

Rationale

The choice of research methodology was determined by the nature of the problem under investigation (Lofland, 1971; Schumacher, 1972). This study employed a methodology that recognized that the relationships and events experienced by participants occurring over time should be examined comprehensively and in their natural setting. Filsted (1979) has noted that an important characteristic of qualitative methodology allows the researcher to get close to the data, obtain first-hand knowledge and develop the "analytical, conceptual, and categorical components of explanation from the data

itself" (p. 33). Reality, meaning, and behavior were analyzed from the perspective of the subjects' interpretation of the world. Attention to the subjects' perspective allowed the researcher to obtain a rich contextual understanding of events and to obtain a powerful way to understand the phenomenon of leadership in organizational change. A field study approach provided a flexible means through which a university's administrative leadership efforts could be examined comprehensively (Babbie, 1979) and in context.

Data Collection

In utilizing qualitative research methodology for the study of organizations, it is important to employ a wide variety of data collection techniques to ensure the flexibility necessary to gathering relevant data (Glaser and Strauss, 1967) and to assuring the validity and reliability of the data. The nature of the phenomenon under study lent itself to using the ethnohistorical approach described by Schumacher (1972) and Smith (1978). This approach focuses on "the accumulation of evidence about events in the past and their subsequent interpretation by the participants as part of a larger phenomenon (Higbie, 1981, p. 47). The ethnohistorian attempts to go beyond the official description of events and to include personal recollections, anecdotes, and quotations in an attempt to develop a vivid, provocatively-rich account of events. To accomplish this goal, a combination of qualitative research techniques commonly associated with the participant-observation approach (McCall and Simmons, 1969) was employed. By analyzing documents such as memoranda, desk logs, letters, written reports, minutes of board meetings, proposals, journal articles, newspaper accounts and press releases, explicit knowledge was obtained and organized into a longitudinal historical record that chronicled events during the "bounded" (Stake, 1978,

p. 7) period of time, 1967-1978, during which the University of New Mexico moved in the direction of a graduate research university. These documents collected from the "official files" of the University of New Mexico and from the personal files of participants proved to be a valuable source of information that provided the researcher with an additional avenue by which to observe how individuals reacted to external events and initiated actions inside the organization. Through informal interviews, the researcher obtained additional, explicit information and "tacit knowledge" (Polyani, 1958) about those pre-verbal understandings of events pertinent to the research effort.

Through this approach, which is described by Smith and Pohland (1972) as a "multi-method, multi-person, multi-situation, multi-variable matrix (p. 11), opportunities became available to follow Iannaccone's (1975) "reiterative cycle" of definition, data collection, analysis and examination of concepts, and subsequent redefinition, as need emerged from the data, generated by this "disciplined inquiry" (Cronbach and Suppe, 1969).

In most qualitative studies, it is common practice to mask the identity of persons and places when developing the descriptive narrative. Rist (1982) notes that masking "becomes difficult as too much data is supplied" (p. 10) about people, events and places. Moreover, a substantial amount of information concerning the background and setting of the study is customarily provided in a credible ethnographic study which would enable a determined individual to identify the research location. The University of New Mexico's involvement in the establishment of a Consortium of Rocky Mountain and High Plains universities, the Western Regional Scientific Laboratory, Inc., and its attempt to manage the Los Alamos Scientific Labora-

tory, all of which are described and analyzed in this study, are unique. For all these reasons it was decided, therefore, to retain the identities of persons, places and events with the provisions that the researcher provide the individuals that participated the opportunity to review and comment on the draft of the descriptive narrative in which their names appeared and in which they were quoted. This process of review and comment by the participants also contributed to the study's validity.

Data Analysis

An effort was made to correlate and analyze the data during the collection phase of this study. Categories developed as a result of preliminary studies were coded and examined for a "goodness of fit" (McCall and Simmons, 1969, p. 233), with new data emerging from interviews and documents during the last seven months of the study. These categories were refined through constant comparison (Glaser and Strauss, 1967) between the original definitions and the emerging data.

The process of data collection and analysis was refined, focused and directed through the process of "theoretical sampling" suggested by Glaser and Strauss (1967, p. 45). Preliminary categories were examined and redefined, and new categories and sub-categories were generated and tested throughout the study, and data that supported the emerging concepts were designated. By examining and comparing the contexts and concepts, probable relationships were formulated and examined. Through this process several concepts emerged that were felt to be most applicable in illuminating the phenomena under study and were substantially accounted for in the data. The emergent concepts were then elaborated and ordered in propositional form.

Generation of Theory

The development of "grounded theory," which attempts to explain

how universities develop in the direction of research institutions, was the final outcome of the study. However, the immediate applicability of the theory should be reserved. Grounded theories emerge from limited ranges of data and are limited to contextual ranges of applications. The development of "special theories adequate to limited ranges of social data (rather than)...the search for all-indusive conceptual themes" (Merton, 1957, pp. 9-10) is of paramount importance in this study.

The value of research directed towards developing grounded theory lies not in the validation of existing theory but, rather, in the discovery of new understandings and perceptions. This study does not assert that the grounded theory developed here will reflect the manner in which all institutions adjust to changes in their environment or the manner in which they will develop in the direction of graduate research institutions. Rather, it is based on the premise that "understanding the response of one institution in one setting may contribute to the fundamental and general understanding of how institutions of higher education respond to their environment and pursue development into research organizations" (Bjork, 1983, pp. 179-180). Although the setting changes from one institution to another, it is suggested that the grounded theoretical framework developed here probably reflects elements that can contribute to a better understanding of how any university interacts with its environment and develops in the direction of a research institution.

Background

The association between science and the federal government is a unique American phenomenon (Veysey, 1963) that has proved to be mutually advantageous: government agencies accomplish their applied research with the assistance of trained university scientists, and

the government's support of science provides a source of strength to the emergence of scientific research in institutions of higher education.

Although reliance on colleges and universities for the performance of applied research began on a modest basis during the the latter part of the 19th Century, the pursuit and support of science by the federal government inside universities grew rapidly (Cowley, 1980; Dupree, 1957; Millet, 1952). During the 1930's scholarly and scientific pursuits were recognized as valuable resources in finding solutions to difficult and pressing national economic and social problems. The practice of linking applied science with practical public service developed as a dominant theme in the federal government's rationale for employing and financially supporting university-based research.

The relationship between the federal government and the university research community entered a new era during the 1940's, when both the diversity and scale of research expanded substantially. The federal government accepted the major financial responsibility for the support of scientific research and for establishing a state of mutual dependence (Ashworth, 1972; Kidd, 1959; Price, 1965) with institutions of higher education. The rapid expansion of federal financial support for university-based research, according to Corson (1975) originated in the years just prior to World War II, when the government sought the assistance of highly-skilled faculty researchers.

During and after World War II, federally-sponsored research rapidly became a major campus activity. Federal grants and contracts became the principle means of providing support for scientific research. Federal support for research rapidly overshadowed university resources as the primary means of funding scholarly research activi-

ties (Corson, 1975; Kidd, 1959; Strickland, 1967). An indirect result of this shift in research support from the universities themselves to the federal government shaped the fundamental characteristic of government-university relationships during the post-War period (Dupree, 1957; Murphy, 1971; Orlans, 1968) and enhanced the research capabilities of institutions of higher education. The federal government emerged as the principal sponsor of scientific research, and the universities were recognized as the locus for carrying out government research.

The dramatic increase in federal support for university-based research and development between 1953 and 1968, increasing from $1.25 million to $1.9 billion (Smith and Karlesky, 1977, p. 18), had a profound impact on the evolution of established and developing institutions. The literature suggests that federal support stimulated the growth of campus research, shifted institutional emphasis toward graduate education and research training, shaped the direction of research, dominated its continuance, contributed to the emergence of research as a measure of institutional stature and ushered in a new era of political relations between the universities and the federal government (Babbidge, 1968; Ben-David, 1972; Heimovicks, 1971; Kidd, 1959; Klopsteg, 1959; Price, 1965). As a consequence of this unprecedented and massive support, the shape of research in universities and the direction of research institutions were no longer the concern of the academic community alone but emerged as both a matter of public and institutional attention. The literature suggests that as the external research environment became more dynamic, research universities adapted, some rapidly than others, to the new demands by placing an increased emphasis on research.

Findings

In the years just prior to 1968, when federal support for research and development in the nation peaked, some faculty members and administrators at the University of New Mexico noted the growing national emphasis being placed on research. During the 1967-1968 period the University was characterized as a "young, maturing institution" (personal interview, Travelstead, July 26, 1982) that was in the nascent stages of development as a research institution. The new administration's emphasis on expanding sponsored faculty research was supported by key faculty members and was viewed as an important vehicle through which the quality of instruction, graduate programs and faculty could be improved and as an important vehicle through which the stature of the institution could be enhanced.

During the 1967-1968 period, the University, in moving toward the establishment of the Office of the Vice President for Research, shifted the manner in which it viewed itself internally and the way in which it wanted to be viewed externally. It was a significant shift and a symbolic step in the direction of the maturation of the institution.

The decision to move the institution into the mainstream of academic life by expanding campus research led, in 1967, to the decision to establish the Office of the Vice President for Research. This decision was made by President-elect Heady in consultation with other key administrators and faculty members and was implemented shortly after he became president in 1968. During the 1968-1972 period, under the direction of President Heady, the role of the Office of the Vice President for Research was defined, accepted by the University community and institutionalized.

The administration recognized that it would have to provide more than a symbolic gesture to move the institution in the direction of a

graduate research university. The administration became an effective advocate for research on and off campus. It convinced the New Mexico State Legislature to approve measures that would retain 80% of the overhead charged to grants and contracts to be redistributed for the support of research activities and reduce teaching loads for faculty researchers. The institution moved to formally link research and publication to faculty promotion and tenure. The image of the institution as a research university was enhanced by the increased visibility provided by the Vice President for Research formally representing the University at important local, state and national meetings and policy briefings.

In the Summer of 1972, Dr. George Springer, the first Vice President for Research and Dean of the Graduate School, died. Finding a replacement for Dr. Springer presented the institution with both a challenge and an opportunity. At this juncture in the development of expanded research activities, there was a consensus among faculty and the administration that the research climate on campus could be improved if an experienced researcher knowledgeable about the institution, the "outside," and capable of playing a major leadership role were appointed.

Dr. Paul Silverman was appointed Vice President for Research in 1973 and initiated vigorous efforts to restructure and focus the activities of the Office on securing research support and enhancing faculty research services. Dr. Silverman observed that Dr. Heady "gave me more opportunity to devote more time to encouraging research and development...establishing relationships both within the campus...and going out and selling the potential of the institution not only at the federal scene" (personal interview,

Silverman, March 24, 1982) but at the state level as well.

By 1974, Dr. Heady's goal of obtaining increased research funding for the University from outside sources began to be realized. During the 1972-1975 period, when federal funds for university research became relatively static, the institution began to move more aggressively in developing its research capabilities. "(W)hen a lot of (universities in the nation) were retrenching, the University of New Mexico was going externally, it as in a marketing...entrepreneurial mode" (personal interview, Kasner, May 20, 1982). The data support this impression. For example, the number of proposals submitted by faculty increased 46% between June 1971-June 1975, from 284 proposals to 613 proposals. The University's expenditure of research, development, and demonstration funds, during this period, increased (in constant 1972 dollars) nearly 25% from $7.7 million to $9.6 million. In 1972, for the first time, the University was listed (54th) by the National Science Foundation in its "Total Federal Obligations to 100 Universities and Colleges Receiving the Largest Amounts, FY 1972." The University remained on that listing throughout the remaining period studied.

The Vice President for Research and the Director of Research and Fellowship Services, Edmund B. Kasner, engaged in an aggressive program of gathering and distributing pertinent information on research opportunities and providing a wide variety of other types of support services for faculty. In addition, the Office of Research and Fellowship Services identified shifts in federal funding policy to assist both the Vice President for Research and research faculty in adjusting strategies and taking appropriate action to secure support.

The federal government was accurately viewed by the University

as the major source of research support and was the principal focus of the institution's initiatives in aggressively pursuing research dollars. Dr. Silverman, as part of the new research-development program, began to increase the visibility of the University's research potential by increasing contacts with administrators in federal agencies and among members of the State's Congressional delegation.

To a lesser extent, because of the limited availability of research funds, Kasner also initiated and maintained similar contacts with members of the New Mexico State Legislature and state agencies. The data indicate that the purpose of this activity was to generate information in support of faculty research as well as to represent the capabilities and image of the University as a research institution.

After the 1973 Arab oil embargo, interest in energy-resource development increased substantially in New Mexico. The University participated in an intra-state research development plan to apply the research development plan to apply the research capabilities of New Mexico universities to the national energy crisis. According to Silverman,

> We convinced (Governor) Apodaca, at that time, to use some of the severance tax money to set up our own state (research) capacity so we could build up our (university)...in a way that would increase our visibility. We provided information, we provided programmatic goals that were politically useful and...meaningful. When we (received) federal funds for (research), we made sure that the political representatives and others were well-aware of what we were trying to do. It was a matter of communication and information (personal interview, Silverman, March 24, 1982).

During 1972-1975, when the University was establishing itself as a more aggressive research institution, it began to affiliate itself informally with other Rocky Mountain and High Plains universities

that shared common research interests. This group, the Intermountain University Research Administrators (IMURA) cooperated on a number of programs designed to strengthen their respective positions in competing for research support.

The national energy crisis brought on by the 1973 Arab oil embargo and the subsequent Congressional enactment of the Energy Reorganization Act of 1974 brought the Rocky Mountain region's energy reserves and research capabilities into sharp focus when plans for "energy self-sufficiency" were developed.

The Energy Research and Development Administration (ERDA) was created and was charged "with the responsibility for developing or increasing the efficiency and reliability of all energy sources" (synopsis of the LASL Management Project, UNM, 1977, p. 3). ERDA's mission effectively translated into a substantial energy research and development effort in which it planned to involve universities in a number of significant ways.

In June 1975, ERDA published a National Plan for Energy Development and Demonstration-ERDA 48 , which indicated that ERDA would contract for a substantial number of research programs, encourage joint research and development projects, including the management of government facilities, coordinate energy research and development efforts with the private sector and with universities, and solicit planning assistance from regional groups. Following the publication of its national plan, ERDA convened a two-day meeting in November 1975 to solicit university participation in its joint efforts. At this conference Dr. Robert Seamans, Jr., ERDA Administrator, said that "ERDA (would) deal with the universities as professional partners in the overall national energy research and development effort" (A Summary: Western Universities Propose

to Manage the Los Alamos Scientific Laboratory, UNM, 1977, p. 5). According to Dr. Silverman who attended this meeting, Dr. Seamans' statement was viewed at the University of New Mexico as an indication that universities would play an important part in ERDA's effort to pursue the goal of energy independence for the nation.

Dr. Silverman became concerned that "Sandia and Los Alamos (Scientific Laboratories) were beginning to move...into all the areas that previously they did not engage and which have been very largely the areas in which we, at the University, were competing. That was our major problem" (personal interview, Silverman, March 24, 1982). Dr. Silverman was concerned with the implications of LASL's emergence as an energy research laboratory, LASL's competition with the University for research support, its proselytizing of University faculty researchers, and the resulting reduction of the institution's capacity to compete effectively in certain research areas became important concerns. LASL's move into a competitive position with the University of New Mexico and other regional universities foreshadowed a far more reduced participation than regional university administrators initially expected.

On May 17, 1976, ERDA held a Western regional meeting in Denver, Colorado. The meeting included representatives of regional universities and energy coordinating agencies. During a meeting between several university representatives and ERDA, administrators indicated that a review of the LASL-University of California contract was in progress and that "there was still time for the universities to submit a competing proposal (to manage LASL) if they acted quickly" ("Synopses of the LASL Management Project," UNM, 1976 p. 4). A significant development within ERDA was discussed during the May 17, 1976, meeting that suggested the direction ERDA would

take in pursuit of its future research program. LASL, with ERDA's support, presented a proposal that it become a regional energy laboratory that would manage the administrative and fiscal aspects and provide direction for ERDA's regional energy-research program. The regional research universities objected to LASL's circumscribing their involvement in regional energy research by managing ERDA's research programs and substituting an administrative support unit that would replace the competitive peer-review process. The expectations of the regional research universities had been substantially diminished since the November and December 1975 meetings with Dr. Seamans, Jr., at ERDA offices in Washington, D.C., and now LASL's emergence as ERDA's regional energy laboratory and its control of regional energy research caused concern within the IMURA group. By mutual agreement of IMURA members, Dr. Silverman was to direct the group's LASL management proposal and undertake the formation of a consortium of Rocky Mountain and High Plains universities, and the Western Regional Scientific Laboratory, Inc.

On June 25, 1976, Dr. Silverman wrote to Dr. Seamans, ERDA Administrator, stating that

> "the University of New Mexico, in association with a regional consortium of Rocky Mountain and High Plains universities, intends to submit a proposal to the Energy Research and Development Administration to undertake the contract management of the Los Alamos Scientific Laboratory" (Silverman to Seamans, June 25, 1976).

Copies of this letter were sent to ERDA and LASL officials, IMURA, the New Mexico Congressional Delegation, the Governor of New Mexico, and key administrators in the University of New Mexico.

On August 5, 1976, Dr. Seamans wrote Dr. Davis, President of the University of New Mexico, to inform him that ERDA's consideration of the extension of the contract for management of LASL had been

completed. He stated that his approval of opening negotiations with the University of California

> "was based on consideration of all circumstances surrounding the contract, including the...universities' interest in... the study of energy problems (and which he considered) as not appropriate to LASL's primary mission...research, development, and testing for ERDA's nuclear weapons program" (Seamans to Davis, August 5, 1982).

Dr. Seamans' decision to open negotiations with the University of California was made approximately seven months ahead of the schedule previously discussed with top ERDA officials in June 1976.

Dr. Seamans' letter raised some rather basic questions about ERDA's intent to rely on universities to find solutions to national energy problems. These universities believed that ERDA's position not to consider their proposal to manage LASL was in direct contradiction of ERDA's policy on the desirability of substantial interaction with universities and believed that Dr. Seamans should reverse his decision to open negotiations with the University of California. In addition, the Rocky Mountain universities believed there was sufficient indications that LASL would increase its participation in energy research and emerge as a substantial competitor for federal research support.

The day after Dr. Seamans wrote his letter to President Davis, on August 6, 1976, the IMURA group met at the University of Montana at Missoula to draft a proposal for the formation of a consortium of universities in the Rocky Mountain and High Plains region. The purpose of this consortium, the Western Regional Scientific Laboratory, Inc., was to manage the Los Alamos Scientific Laboratory.

The University increased and persisted in its contacts with the New Mexico, Colorado and Wyoming Congressional Delegations to bring increasing political pressure to bear on ERDA in an effort to force a reversal of its contract award decision. At the request of

Dr. Silverman, Senator Domenici made inquiries among members of the Joint Atomic Energy Committee to determine how members were informed about the LASL contract renewal; members of the New Mexico and Wyoming Congressional Delegations generated support for a Congressional hearing into the procedures used to make the contract award decision; and staff briefings were planned for important members of Congress, their staff, and the new Carter Administration.

On January 11, 1977, Dr. Silverman met with members of the WRSL, Inc., proposal staff and indicated that in consideration of ERDA's failure to move on the issue of establishing a cooperative relationship between LASL and the universities, it was time to increase its pressure on ERDA. Final plans to incorporate the consortium were made, press releases prepared and Mr. Kasner was designated to brief the New Mexico Congressional Delegation in Washington.

During the middle of January 1977, Dr. Seamans wrote to President Davis informing him of ERDA's decision to proceed with negotiations with the University of California for the management of LASL and disavowed any intent to discuss future management of LASL by the WRSL, Inc. The consortium proceeded with its proposal preparation plans. At the end of January, LASL convened a meeting to review its research programs. The facts centered around LASL's national security role and deemphasized its energy research role. The 1% budget figure presented by LASL as an accurate reflection of the extent of its regional energy work clearly contradicted LASL's and ERDA's previously published statistics as well as those of the University of California. It was significantly less than the figure, over half of LASL's operational budget, which Dr. Agnew presented in 1975.

On March 24, 1977, Dr. Silverman received a letter from

General Starbird (ERDA Assistant Administrator for National Security) along with the unopened proposal. General Starbird indicated that he was acting on directions from the ERDA Administrator responding to WRSL, Inc.'s, unsolicited proposal for management of LASL. He indicated that the contract extension had already been signed for an additional five year period. He also encouraged the universities to continue discussions with ERDA officials "on the broader questions of regional research and development and the role that UNM can plan" (Starbird to Silverman, March 24, 1977).

Although the universities pursued alternative arrangements to participate in ERDA research programs and to improve relations with LASL and ERDA, no clear picture emerged from ERDA during the Spring of 1977. The universities shifted their emphasis from the long-term goal of managing LASL to pursuing a contractual relationship with ERDA to examine regional research problems and capabilities.

The continued unwillingness of ERDA to deal with the regional universities and their several proposals was frustrating and discouraging to Dr. Silverman. The data suggest that his efforts to muster political support proved ineffective in moving ERDA to reconsider its management contract decision and to consider a role for regional universities in energy research.

Although the universities' attempt to take over the management of LASL failed and the consortium was dissolved, it did apparently have a significant impact on ERDA's plans to make LASL a regional energy laboratory. As a result of this intense controversy, ERDA confirmed that LASL would remain primarily a weapons laboratory. This policy decision effectively prevented LASL from becoming a substantial competitor to regional universities for energy research support. ERDA also dropped its plans to designate LASL as a regional project-

reviewer that could control the flow of energy research in the region. Thus, LASL's threat as a direct competitor to regional universities diminished substantially and the acquisition of energy research support continued as it had in the past, through the traditional ERDA peer-review process.

Analysis

A review of the literature on administrative leadership indicates that there are numerous definitions of that term. Leadership has been defined in terms of organizational goal achievement (Bass, 1981; Bellows, 1951; Cattell, 1951; Cowley, 1928; Davis, 1942; Davis, 1962; Knickerbocker, 1948; Urwick, 1953). The accomplishment of group goals is directed towards organizational survival; those goals are personified (Urwick, 1953) and facilitated by a leader. Mumford (1909) suggests that the emergence of leaders depends on skills required to solve social problems existing during periods of organizational stress, change, and adaptation. Bass (1981), on the other hand, has maintained that the "situation" is not in itself sufficient to account for leaders. Gouldner (1959) and Pfeffer and Salahcik (1978) have suggested that executive succession is an important factor that provides an opportunity for the expression of new ideas in the process of organizational adaptation. These new ideas may be posed and translated into appropriate strategic action by leaders in an organization that is no longer in tune with current environmental contingencies. The literature (concerned with) leadrship and organizational goal-attainment recognizes that the leader of a complex organization establishes goals and directs the resources of the administration towards achievement in a definite way (Cowley 1928). Leadership may be measured in terms of its effects on group performance in attaining organizational goals (Bellows, 1959; Cattell, 1951; R. C.

Davis, 1942; Knickerbocker, 1948). The principal dynamic force that initiates, motivates, and coordinates the organization in the accomplishment of its goals is the leader (Davis, 1962; Urwick, 1953).

External environmental pressures, according to Terreberry (1968) and Meyer (1978), impinge upon all organizations, but their influence is mediated through persons in leadership positions. Leaders take charge at boundary points and relate the organization to its external environment (Herbst, 1962; Katz and Kahn, 1978; Rice, 1963). Leaders on these boundary points are in a position to perceive changes in the external environment. Changes that are of a sufficient magnitude to imply the need for adjusting its equilibrium may be also of sufficient magnitude to imply the need for structural reorganization. Gouldner (1959) and Lewin (1951) note that leaders are important instruments in maintaining external equilibrium with the environment through systematic internal structural change.

The use of power provides a valuable perspective in analyzing the actions of institutional leaders. Etzioni (1964) notes that university leaders may use both legitimate power of the office and normative power to gain compliance of organizational members and may use normative power and persuasion to gain compliance externally to achieve organizational goals.

During the 1967-1968 period, Dr. Heady served as the Academic Vice President and was President-elect. During this period of executive succession he perceived and mediated dramatic changes in the institution's external research environment. He and other key administrators recognized the implications of those changes for the future of the institution and initiated restructuring the University's organizational structure. Those efforts were in response to extern-

al changes and were specifically focused towards increasing the participation of faculty members in campus research and moving the institution in the direction of a graduate research university. The establishment of the Office of the Vice President for Research was an important, symbolic act to persons both inside and outside the University; it recognized the importance of faculty involvement in research and established organizational support for such activities. Dr. Heady provided the leadership that was needed for the University to maintain a state of equilibrium with its environment. During the 1972-1978 period, Dr. Silverman and Mr. Edmund Kasner, through engaging in an aggressive resource acquisition effort, maintained strategic positions on the boundary of the institution and its external research environment. These boundary positions enabled them to sense changes in the research environment, modify its research support structure, and act to protect its research interests.

The data indicate that throughout 1967-1978, key University administrators provided the leadership, and encouraged faculty research efforts more actively and pursued the acquisition of research support more zealously than they had previously. Concurrent with the encouragement, key administrators provided the leadership necessary to advocate and secure changes in institutional policies to support faculty research. These policy changes included the reduction of teaching loads for research faculty members, the retention and redistribution of a portion of the overhead charged to grants and contracts by the institution to stimulate research, and the formal linking of research and publication to faculty promotion and tenure.

The leadership provided by the President, successive incumbents of the Office of the Vice President for Research and Fellowship Services, stimulated a significant increase in faculty research.

A segment of the faculty became increasingly active in pursuing external research support between 1967-1978, as evidenced by: (1) the 382% increase in the number of proposals submitted from 270 to 1,032; (2) the 185% increase in research and development expenditures (from $6.5 to $12 million) during a period when federal expenditures for university research support had reached a static level nationwide; and (3) emerging as a nationally ranked institution through its initial and continued listing on the National Science Foundation's "Total Federal Obligations to 100 Universities and Colleges Receiving the Largest Amounts, FY 1972" through 1978.

The formal power of and symbolic importance inherent in the Office of the Vice President for Research contributed to changing the manner in which the institution was viewed internally and externally and contributed to moving the institution in the direction of a research university. The collegial nature of faculty membership in the University's organization demanded that they emphasize their normative powers in order to encourage faculty participation in RD&D activities. Their official positions and power, however, did not extend beyond the University. This necessitated utilization of personal relationships and persuasion to gain compliance and to pursue the accomplishment of institutional goals. The data indicate that a combination of formal power and normative power was the predominant characteristic of Dr. Silverman's and Mr. Kasner's internal and external contacts.

As demonstrated in the data, the leadership exhibited by several key University administrators enabled the University to focus more effectively on research. Similarly, the leadership exhibited by the incumbent of the Office of Research Administration and Fellowship

Services facilitated, encouraged and supported faculty research as well as provided a mechanism through which the Univerity could sense and adjust to changes in its external research support environment. The leadership exhibited by all of these administrators contributed to the attainment of institutional goals and suggests the following propositions.

1.0 The more strategic the university leader's position on the boundary of the organization and its environment, the greater the likelihood that change in the external environment will be detected.

1.1 The greater the degree of change in a university's external environment, the greater the pressure upon leaders to establish equilibrium between the institution and the environment.

1.2 The greater the degree of change in a university's external environment, the greater the pressure for leaders to initiate specific, goal-attainment activities.

1.3 The greater the university leader's use of normative power, the greater the probability of success in mobilizing internal support.

1.4 The greater the university leader's reliance on personal relations and persuasion, the greater the probability of success in mobilizing external support.

Toward a Theory of Administrative Leadership in Developing Research Universities

Zetterberg (1965) notes that to ask for an explanation of a phenomenon is to ask for a theory. The proposition suggested by the data that are related to the phenomenon of the emergence of the University of New Mexico as a graduate research institution is a review of what has been learned about administrative leadership from this unique study of a single institution. Administrative leadership is a "determinent" (Zetterberg, 1965) and its corresponding properties emerged from the data. A limited but "grounded" theoretical explanation (Glaser and Strauss, 1967) of the phenomenon of the development of the University in the direction of a graduate research university is presented as a statement that concludes the analysis and can be summarized thus:

The development of an undergraduate teaching institution in the direction of a graduate research university is partially explained as a function of the degree of effort towards and success at administrative leadership.

Significance of the Study

Organizations are social inventions that are both fluid and dynamic. They move in time and space, act and react, and are shaped by a combination of external and internal environmental factors that both threaten survival and provide impetus for modification. The manner in which environmental influences affect organizations and the adaptive mechanisms utilized by University leaders are important foci for organizational research.

This ethnohistorical study of the University of New Mexico is unique in both setting and purpose. It represents the first ethnohistorical effort to contextually examine administrative leadership as a factor associated with the development of a graduate research university at a time when federal funding for research support remained at a relatively static level. This study provides a contextually rich historical description of a variety of forces that influenced some members of the faculty and administration of the University of New Mexico to take a particular course of action that shaped the future character of the institution.

It is hoped that any conclusions drawn from this research effort will contribute to the ability of universities to understand the forces that are associated with the emergence of research institutions. At the very least, it is hoped that this study will contribute to the literature on how universities adapt to changes in their external research support enironment and the utilization of administrative leadership as a mechanism associated with the development of

research universities.

The value of qualitative research rests in the discovery of new understandings and insights into the development of grounded theory. Although this paper does not assert that the grounded theory developed here will reflect the manner in which all institutions adapt to external changes and develop in the direction of graduate research institutions; however, it does advance the premise that understanding the response of one institution may contribute to both fundamental and general understandings of how similar universities respond to similar changes and needs in their environments. Although the propositions developed here are contextually limited to this study, they have raised questions for further research into this phenomenon.

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